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ABSTRACT

A view of construction from the window of a first-grade classroom was the catalyst for a multi-grade, multidisciplinary curriculum project at St. Patrick's Episcopal Day School in Washington, DC. This article provides background information on the school and the project, and details the students' work. The project description includes how the project gradually came to encompass teachers and children throughout the school; the teacher's colleagues in technology, science, art, religion, and music as well as children in the nursery school, kindergarten, and grades 5 and 6 worked with the first-grade students on different portions of the project. The article includes captioned photographs documenting the construction site and the students' work. (Author/HTH)

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Faces to the Window: "The Construction Project"

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Julia H. Berry

Abstract

A view of construction from the window of a first-grade classroom was the catalyst for a multigrade, multidisciplinary curriculum project at St. Patrick's Episcopal Day School in Washington, DC. The article has two sections. In the first section, one of the school's science teachers provides background information. In the second part, a first-grade teacher reflects on her classroom's project that gradually came to encompass teachers and children throughout the school. The teacher's colleagues in technology, science, art, religion, and music, as well as children in the nursery school, kindergarten, and grades 5 and 6, worked with her first-grade students on different portions of the project. The children and their work are documented in captioned pictures.

Background on "The Construction Project": Julia H. Berry

In a preschool or child development center, a project investigation can involve all of the children and the entire day as interest and involvement engage the class. Pursuing a project in an elementary classroom is a little different. A teacher of school-age children has a formal curriculum to implement that includes skills and knowledge that her children must master. For many elementary teachers, taking on a project can feel like an extraordinary burden added onto what is usually an overfilled daily schedule.

St. Patrick's Episcopal Day School is a nursery through grade 8 independent school in northwest Washington, DC, with an enrollment of about 460 students. In her reflections presented below, Elizabeth Allen, a first-grade teacher at St. Patrick's, describes how "The Construction Project" gradually became insinuated into her teaching despite her reluctance to add "one more thing" to her already busy lesson plans. How did this happen? Mrs. Allen knew from the children's persistent questions and lingering looks out the window that their interests and attention lay outside her classroom. The very best teachers are those who learn from years of teaching experience how to plant the seeds of their students' passions and nurture them into bloom between the cracks of the daily routine. Elizabeth Allen is

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one of those teachers.

The Construction Project, which grew out of a simple and unplanned activity, became a highly successful months-long learning experience not only because it came from the interests of the students but also because it fit in with their everyday learning. As you read about the evolution of the Construction Project in Mrs. Allen's classroom, you will see the project phases described in Helm and Katz's book *Young Investigators: The Project Approach in the Early Childhood Classroom* develop as the children and teachers conduct their investigations just as clearly as if Mrs. Allen had planned the project from beginning to end.

St. Patrick's Episcopal Day School, Washington, DC.

In employing the Project Approach, as in all good teaching, one should never underestimate the power of discussion and reflection. Talking about our work in the classroom, both successes and failures, provides opportunities for collaboration across classrooms, grades, and disciplines. Whether you are a student or a teacher, discussing, analyzing, and reflecting with others can bring new ideas, new talents, and new excitement to a project. Talking about her students' enthusiasm for their work and asking others with expertise and time to help brought both technical knowledge and new social opportunities to Mrs. Allen's first-graders. The project became broader, deeper, and richer.

Our message to teachers just beginning project learning is: Don't be daunted by the size of a project. Start small. Let it build on itself. Your students' enthusiasm will help carry you along. Talk to others and invite them to help. Project work is richly rewarding.

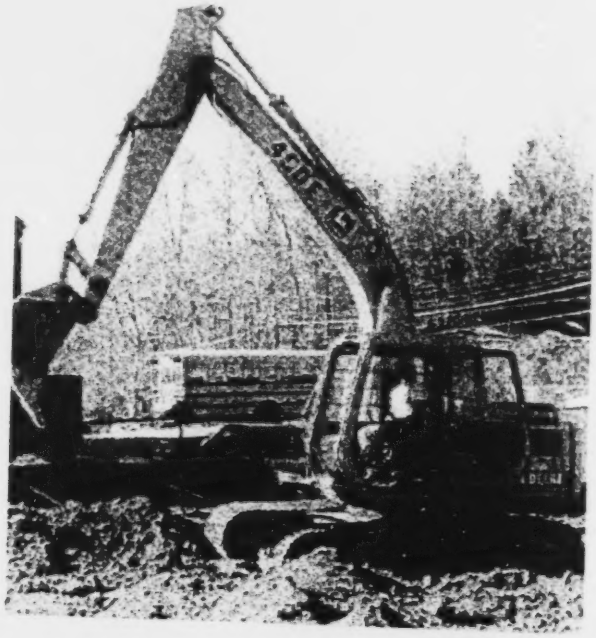
A Teacher's Reflections: Elizabeth H. Allen

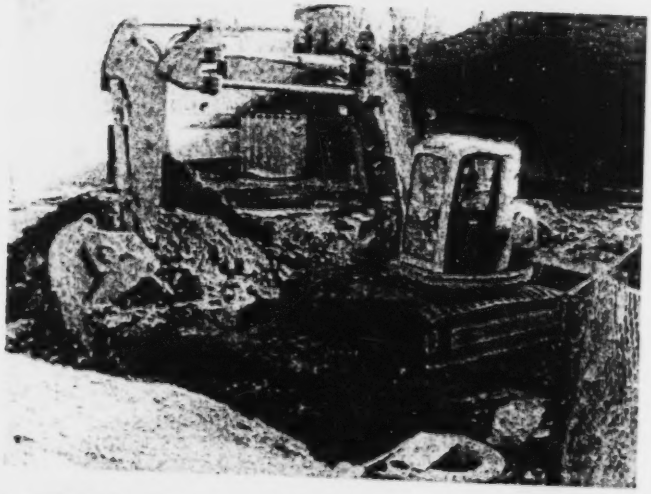
The building site was right outside one of the windows of our classroom. The window didn't give a full view of all the action—we had to go outside for that—but a real estate agent advertising the view would confidently describe it as "a picturesque view of the building site" instead of the more accurate "building site squint." The view was significant because it was just small enough that the class could have ignored the construction and

simply waited to be irritated by the loud noise when the drilling into the outside walls of our classroom began.

Mrs. Allen and her class watch the construction from the playground deck adjacent to their classroom.

I felt deep in my conscience that I ought to use the construction as an opportunity to realize all those Piagetian ideals of taking young children beyond their present world by moving from the tangible and visible concrete world to explore the hitherto unknown. But, as I was wrestling with my conscience, several enormous pieces of excavation machinery arrived outside the windows. These first big earthmovers lumbered about, while beneath their wheels little fussy worker-bee equipment rushed around behind the scoopers and diggers, patting the ground flat and making it tidy. They seemed like a Mom putting the bedrooms straight in the morning to give the house that tidied-up feeling, so the real work of the day could begin.





Excavation equipment working on the construction site.

Suddenly the enormous machines' work was almost finished. It was then that I realized they would soon be gone forever—and a fantastic teaching opportunity would be lost. Promising myself every possible escape route, "We'll just ask the computer teacher to take pictures of the equipment, and the children can *write* about it!!" Ms. Martin, the computer teacher, rushed down to the playground and took pictures with the school's digital camera. A sense of relief poured over me as I realized we had just, and only just, caught the boat.

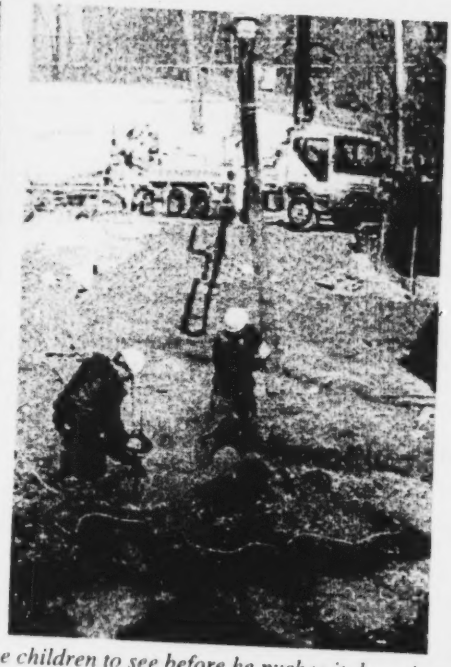
Each day, the children asked me question after question about what they could see happening outside the window. I told them what I knew—that a new school building was going to be built on the old play park and that, yes, they would still be at school when it was finished, and, no, I wasn't sure what it would look like, but Mark Vershbow, the business manager, did know, and, yes, we could invite him to the classroom to show us the plans and answer our questions.

He came. He brought the blueprints and Marney Bands, the construction company's project manager ("A woman in charge of all those men?... Hmm, interesting," the children thought). Mark and Marney explained what the plans represented, and how the architect (a new occupation to some students) represented windows and doors on the plans. My idea to have the children draw a "blueprint plan" of their desk top was swept away by other events, but ideas for teacher lesson plans were sneaking up on me.

Mark Vershbow, St. Patrick's business manager, and Marney Bands, the construction company job manager, visit Mrs. Allen's class to show the architect's blueprints and answer questions.

It was at this point that I began to pick my way gingerly towards the beginning of a Construction Project, but not alone. Ms. Berry, the science teacher, was also taking digital pictures of the construction site. One day, she came in to tell me that the concrete trucks had arrived and were about to pour concrete into trenches already laid with rebar (metal rods that support and strengthen foundations). We dashed outside to watch the pour, and as we watched, I realized once again that this was a now-or-never moment. We should make a time capsule! In high excitement, we rushed back to the classroom where I found a Cadbury's Flake can bought on my last trip home to England. Quickly, the children wrote facts about themselves and their future goals and dreams, while Ms. Berry sought out the foreman to see if we could bury our can in the foundation. On her return, the excitement in the room reached an almost fever pitch. We learned that he would help us bury our can, but that it was to be TOP SECRET because we were not really allowed to do it. Ms. Berry recorded the event on camera. Back in the classroom, I looked for the empty blank books that I had bought the year before, simply because I liked their empty white pages, but with no specific idea as to what I would use them for. Miracle of miracles, I found them and there were enough. In the books' fresh pages, the children wrote their first*Construction Project Journal* entries.

The concrete trucks arrived and began to pour.



The concrete foreman holds the time capsule for the children to see before he pushes it down into the freshly poured concrete, first with his hand and then with a long rebar pole. Going, going, gone!

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Children write about the time capsule in their construction journals.

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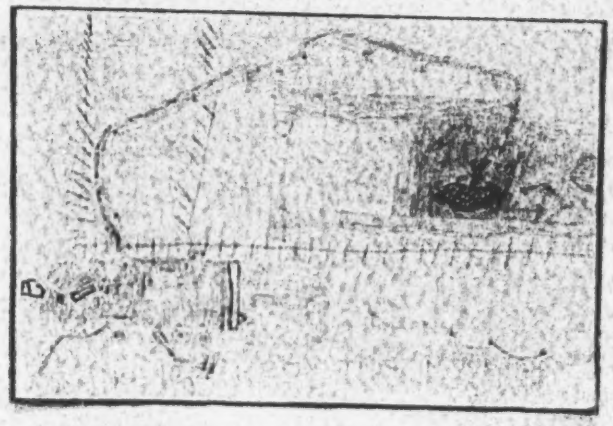
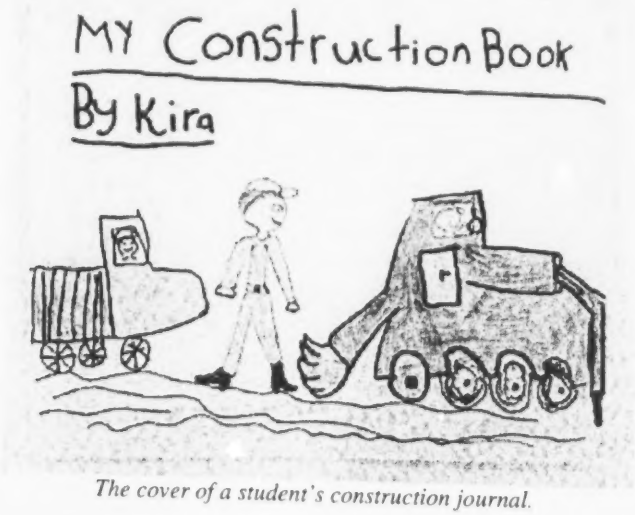


Two girls collaborated on this very accurate rendering of the concrete pumper. Note their written observation that "The spider-like legs keep the pumping truck steady."



The cover of a student's construction journal.

It wasn't until I got home that night that I remembered a photograph of a little girl and woman and Chinese construction worker. I went to the basement and found the inch-and-a-half-long photo. On the back was written "E(lizabeth) burying a silver dollar in the foundations." This was a photograph of me and my mother in Malaysia when a new bungalow was being built for our family on the rubber estate where my father worked as manager. It still pleases me that the favorite candy of my favorite aunt (a wonderful teacher who died 1988) was Cadbury's Chocolate Flake. As a "teachable moment," that day was as about as good as I ever expect to meet in my career. The class and their teacher were well and truly into this project.

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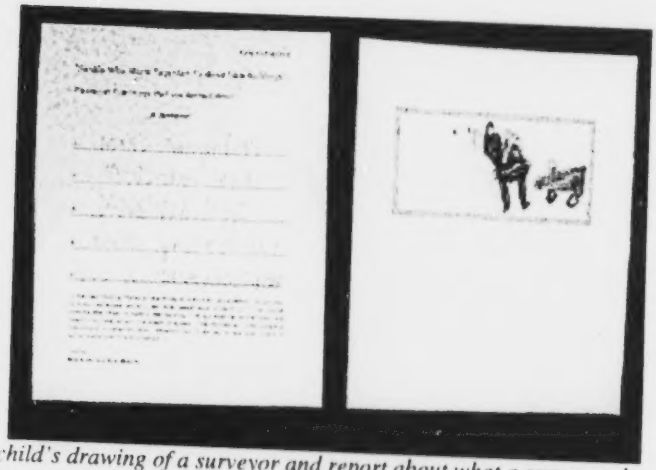
Elizabeth Allen (age 3), her mother, and a construction worker burying a silver half-dollar in the foundation of their home in Malaysia .

Ms. Berry was the school's faculty representative on the building project and kindly liaised between the work crews and the classroom. She also made arrangements for the children to go out in small groups to interview the men when the snack truck came. I drew up an interview questionnaire, so the children would have specific questions to ask, for example, "What is your job?" "How long have you done this work?" "What do you like about it?" "What do you dislike about it?" Most of the men said they disliked working in bad weather. Nearly all said they had learned their trade on the job. Ms. Berry came back with one group who had discovered that one man's grandfather had come from Lithuania—providing an opportunity to look Lithuania up on the map—and had worked on the wood-carvings in the U.S. Capitol building. After their interviewing experience, the children could no longer see construction workers as just construction workers. They knew the workers' names and were deeply respectful of their skills and work. I wonder if they will always pass a messy, noisy building site with respect and knowledge, and see the people who labor there as individuals. It would be nice to think so.

Children in their hard hats, clipboards ready, interview workers on the construction site. Sometimes spelling was hard!



A child's drawing of a surveyor and report about what a surveyor does.

As part of our regular first-grade curriculum, the children study author Gail Gibbons and write a nonfiction book about a topic that they are, or would like to become, an expert in. It was in connection with the author study that the children read the book *How to Build a House* by Gail Gibbons. Ms. Berry used the book to introduce the vocabulary of a construction project—foundation, excavation, footings, surveyor, framing, mason, among others.

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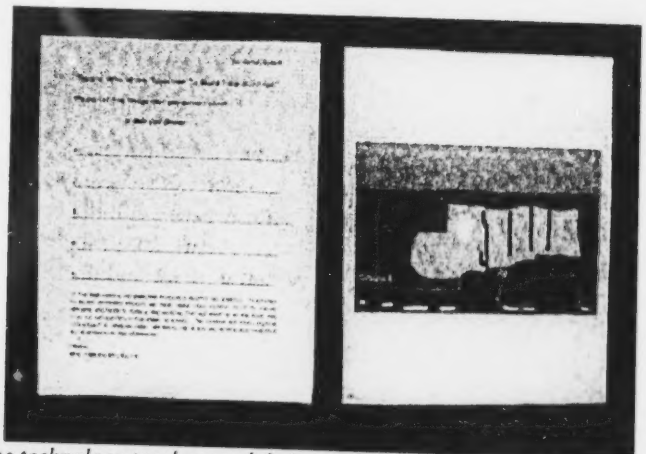
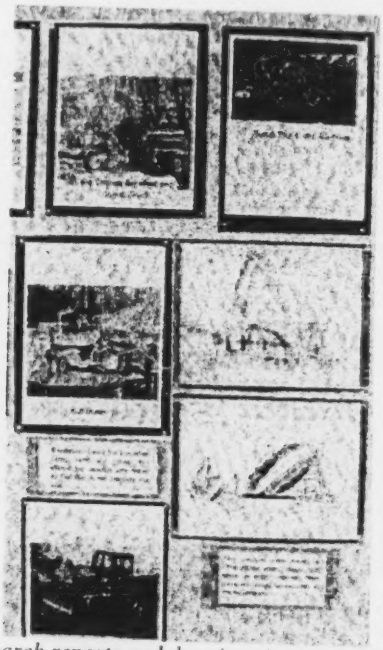


The technology teacher used their interest in the excavation equipment as a focus for teaching the children how to use Kidpix ® drawing software.



Children's research reports and drawings in crayon, colored pencil, and ink of construction equipment. The children observed the equipment as it worked and studied digital photographs and resource books before attempting their drawings.

Afterward, the children were given the nursery rhyme "This Is the House That Jack Built." The children then read and illustrated the text, making sure they had a drawing for each key noun mentioned. The subsequent drawings were delightful—cows with crumpled horns and maidens all forlorn. This activity also added a number of adjectives to the students' working vocabulary.

In science class, Ms. Berry proposed that the children build a model of the new school building. The science lab became a woodworking center as the children began to accurately measure, saw, and drill wood pieces and then glue them into cubes, so they

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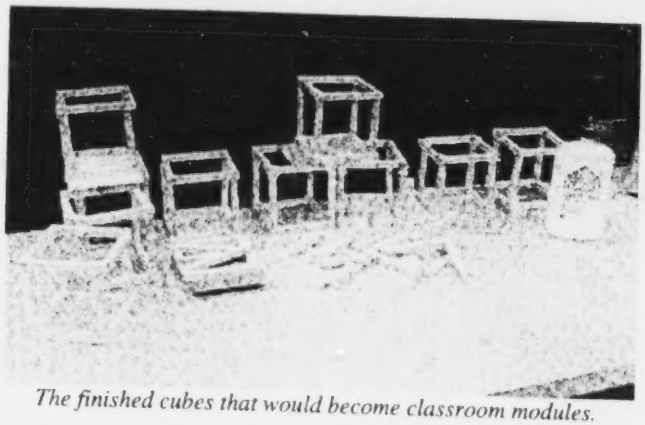
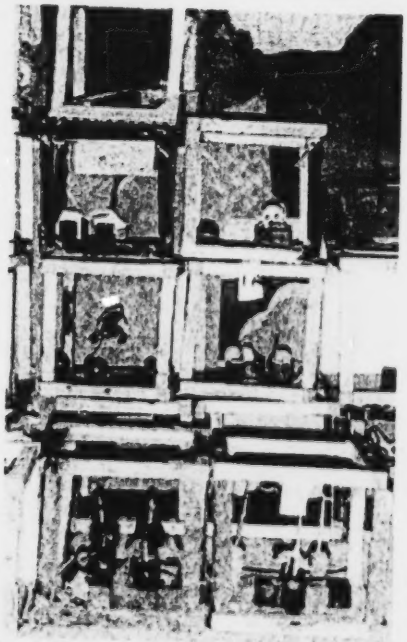
could each make their own new classroom. Over several weeks, the classroom cubes were painted, interiors decorated, and miniature furniture made. The completed cubes were assembled into a building on top of a foundation the children poured from concrete brought in to the lab by the brick masons.

In preparation for building a model of the new building in science class, the children were given toothpicks and marshmallows to experiment with different shapes for building. One student (a future architect, perhaps) drew a plan before she tried building her marshmallow structure.

The girls discovered early in the process that collaboration in measuring helped with accuracy.

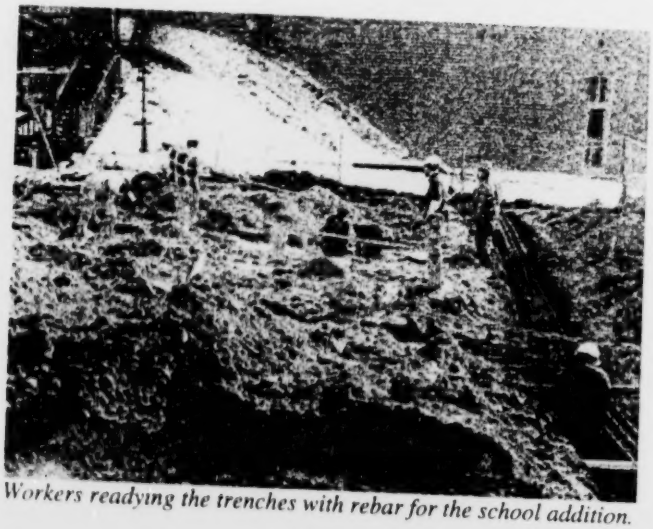


The finished cubes that would become classroom modules.



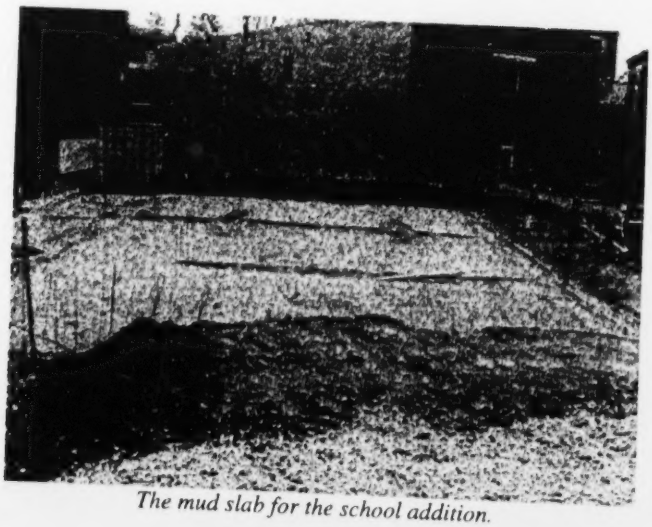
The children furnished each classroom cube.

The children dug trenches in a tub of sand to make grade beams for their foundation. They placed paper-clip rebar in the trenches to strengthen the beams before adding concrete.



Workers readying the trenches with rebar for the school addition.

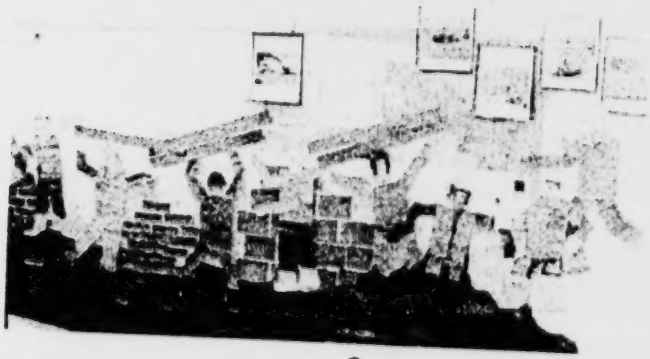
Ms. Berry used concrete brought in by the brick masons to smooth a mud slab on top of the grade beams the students had poured the previous week.



The mud slab for the school addition.

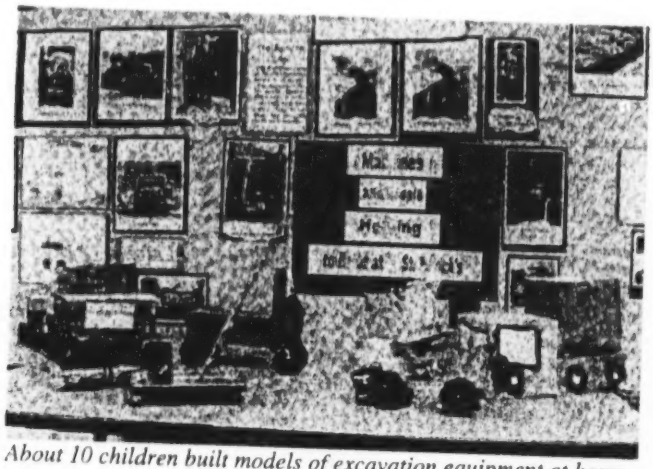
The completed model sat on its foundation and also above a cut-away view of the Earth showing the core, mantle, and tectonic plates that make up the Earth's crust. The children painted the underground mural as part of their Earth Science unit.

Excitement about our construction project began to spread throughout the school. In the art department, Mrs. Jones, the art teacher, began a study of figures in motion using photos of the workers doing different jobs. These figures became a background mural for the science class's school model.



In the art studio, children studied the human form in action using digital photos of construction workers. Mrs. Jones made realistic paper fabric by photocopying plaid and denim cloth on our color copier. The finished figures were displayed in action behind the building model they built in science class.

After exposure in art and science to hands-on building, the children were invited to make their own machine out of "junk" such as toilet rolls and boxes. This activity was a choice, not a requirement, and it was exciting to see about 10 children take the opportunity to make machines and bring them in.



About 10 children built models of excavation equipment at home using recycled materials such as cereal boxes, paper tubes, and deli boxes.

In religion class with Mrs. Klingenburg, the children were read the story *A Tale of Two Houses* by Melody Carlson, after the parable in St. Luke's gospel (Chapter 6, verses 47-49), about the wise man who built his house upon rock and the foolish man who built his house upon sand. The children drew a house built on rock and a house built on sand and retold the story in their own words.

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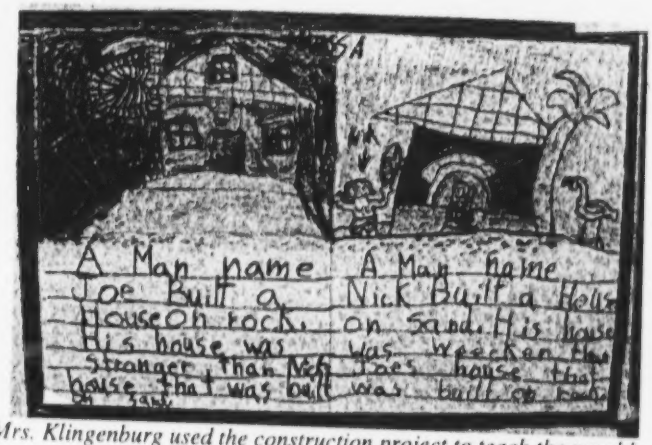
A Man name Joe Built a House on rock. His house was stronger than Nick house that was built on sand.
A Man name Nick Built a Hous on sand. His house was wreckon than Joes house that was built on rock.

Mrs. Klingenburg used the construction project to teach the parable of the wise man and the foolish man. The children were read a book based on the parable and were asked to rewrite it in their own words. They illustrated their retellings with colored pencil drawings.

In my class, the children continued to add entries to their construction journals. They also wrote poetry after collecting "sound words" with buddies from Miss Smith's sixth-grade language arts class. They read and rewrote a story from The Oxford Reading Tree series *The New Classroom.* The story is about a new prefabricated classroom being lowered into place at school. The children in the story discover that the classroom module has been placed upside down. Once it had been turned the right way up, the children in the story go inside to inspect their new classroom. They find that the toilets in the bathrooms are now upside down! To change the format a little, I made color photocopies of the book's pictures and left the space underneath for the children to write their own words. I gave the same story pages to Mr. Locke's fifth-grade class who were unfamiliar with our readers, and they wrote their own versions of the story. The first-graders and fifth-graders were then paired up to read each other's stories. My first-grade class had now worked with both sixth- and fifth-grade students. Now when they met in the corridors, the children knew each other and greeted one another as friends. This community building was an unexpected benefit of our project work.

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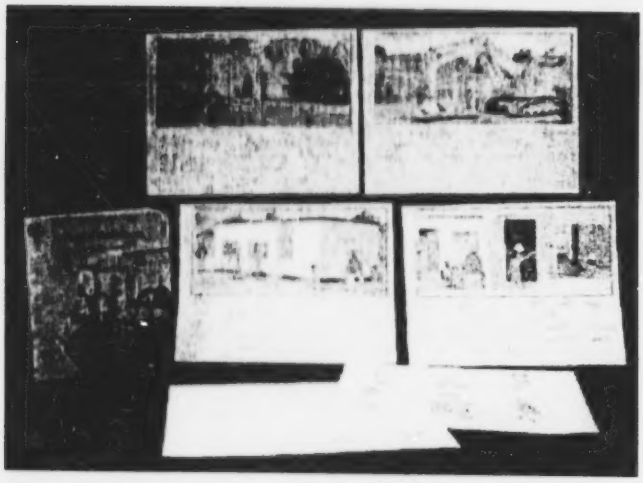
Grade-6 teacher Ms. Smith collaborated with Mrs. Allen in a poetry writing experience for their two classes.

Children in both grades gathered construction sound words and made lists.

The children worked together in small groups to write construction poems.

A finished poem illustrated by a first-grader.



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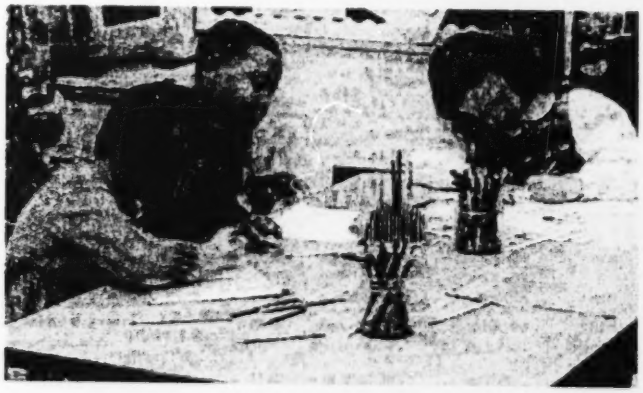
The Grade 1 Oxford Reader series had a story about school construction, Our New Class. *Mrs. Allen put copies of the illustrations into blank books for the children to write their own story.*

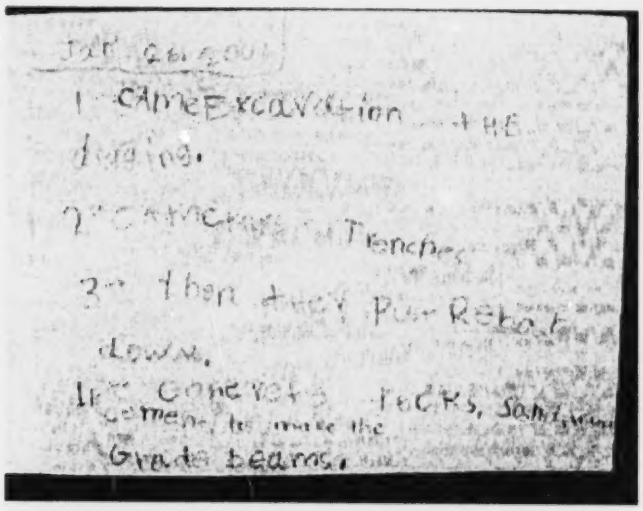
Mr. Locke's fifth-grade class used the same blank books to write their own version. The first- and fifth-graders read their stories together in a hallway.

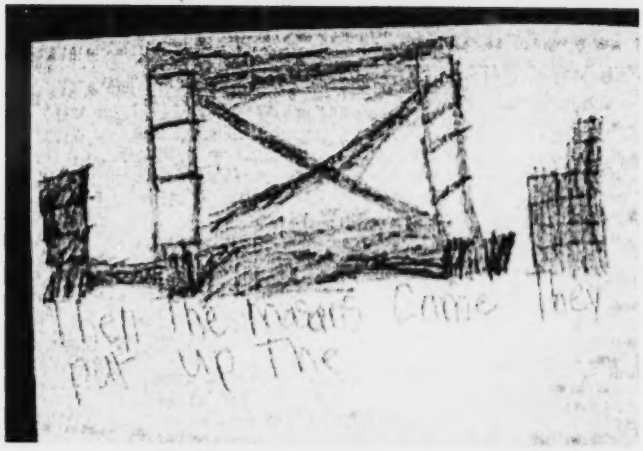
In the classroom, we became the proud owners of a set of construction Lego®. I had planned a 45-minute building session around these blocks, but it actually took about 12! There were some real leaders in the class when it came to following Lego® construction plans. Those children had the plans on the floor and within a few minutes had made the model, complete with hard-hatted workers, pulleys, trucks, roads, and shovels. The Lego® site became a constant source of discussion over the next month and was always being rearranged to reflect the changes outside the window.

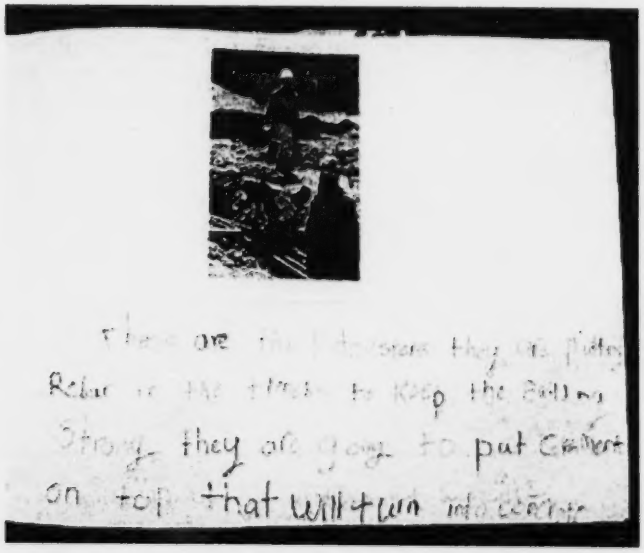
The classroom construction Lego ® materials.

Throughout the year whenever our walls vibrated with noise, we flew to the window to see what was going on. We needed no apology for the disruption, because we were excited by it and it fitted into our work. Although the description of this project makes it appear to be the focus of much of the class's activity, in reality it wove in and out of the regular curriculum and fit in comfortably with the everyday business of reading, writing, and math. The Construction Project was not an overwhelming undertaking because so many participants in the community buoyed it up. The class was richer for being exposed to the world outside our window.









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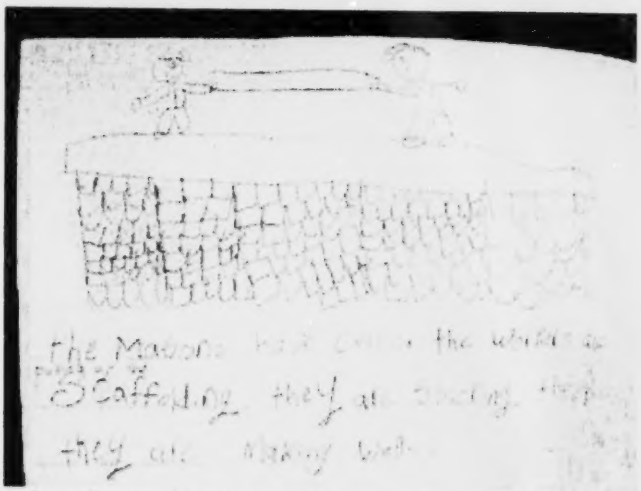

Throughout the year, Mrs. Allen's children continued to add pages to their construction journals. Some of the pages were illustrated by the children; on other pages, the children used miniature prints of Ms. Berry's digital photos as illustrations.

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The enthusiasm Mrs. Allen's class felt about the school's construction project and their growing expertise about the process was an inspiration to everyone. Here kindergarten and nursery school classrooms join in the fun and create machines and structures. Everyone is part of the crew!

Conclusion

Late in the spring, Mrs. Tyler, the first-grade music teacher, generously offered to write a musical play to bring our project to a performance climax. But with the time remaining in the semester, we could not do much more than brainstorm. However, over the summer, Mrs. Tyler took the story of *The Clever Carpenter* by R.W. Alley and skillfully adapted the story into 19 roles and began writing music and songs to go along with the script.

The story is of Samuel Plank, a carpenter, who receives an order to make a chest of drawers for a bedroom and a slide for a school playground. He makes each of the chest's drawers in the shape of the garments to be placed inside, hence a sock drawer is in the shape of a sock, the bow tie drawer looks like a bow tie, etc. Samuel's client is horrified and refuses to pay. Similarly, the school principal dislikes the unconventional slide. The carpenter is out of business until Captain Custard, a sea captain, commissions a house for his retirement. Samuel, watched by all the townsfolk, makes a boat-shaped house that the Captain loves. After being accepted for his unusual and creative ideas, Samuel Plank's fortunes change, and he becomes a much sought-after carpenter.

When a teacher allows herself to embrace project work within the everyday bustle and demands of the classroom, creative ideas have a greater possibility of emerging, blooming, and flourishing. As Samuel states when asked by the Mayor whether he had any ideas for a new town clock, "Of course, ideas are a specialty of mine!" So, when a project opportunity comes your way, promise yourself nothing but move as the circumstances and inspirations hit. The project will energize the children and deepen their classroom life, as well as serving the lofty goal of making them aware of the world around them. And it's fun to do.

The addition was nearly finished at the end of the school year.

Acknowledgments

St. Patrick's is fortunate to have an administrative team that values highly collaborative and integrative teaching as well as a wealth of technical resources to support our work. We would like to express our thanks to Peter Barrett, Head of School, and Gretchen Spencer, our Division Head, for their support and confidence, and to all of our colleagues for their help and enthusiasm.

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